APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/924,542	08/09/2001	Mark C. Sullivan	EYE-102	1986

7590   12/24/2002

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EXAMINER
BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 12/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)	
Office Action Summary	09/924,542	SULLIVAN	
	Examiner Kevin Burd	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ___3___ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 16, 2002* _____.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-20* _____ is/are pending in the application.

   4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-20* _____ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

   If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All b) ☐ Some* c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   *See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

   a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *8*

4) ☐ Interview Summary (PTO-413) Paper No(s). _____

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____

DETAILED ACTION

1.   This office action, in response to the amendment filed 10/16/2002, is a final office action.

Response to Arguments

2.   Applicant's arguments regarding claims 9-13 filed 10/16/2002 have been fully considered but they are not persuasive. Applicant states Krasner neither teaches nor discloses processing for a millisecond segment of data. However, Krasner discloses storing a one millisecond segment along with additional information which is used in the process. Applicant does not claim only one millisecond segment. These rejections are maintained.

    Regarding claim 13, Krasner further discloses the step of computing the local oscillator drift by frequency locking to the received signal (column 11, line 65 to column 12, line 7). This allows the carrier frequency to be refined.

3.   Applicant's arguments with respect to claims 1-8 and 14-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been obvious at
> the time the invention was made to a person having ordinary skill in the art to which said subject
> matter pertains. Patentability shall not be negatived by the manner in which the invention was
> made.

5.   Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Krasner (US 6,133,871).

Regarding claim 9, Krasner discloses a GPS receiver in figure 1A with a GPS

antenna 40, a receiver front end 42, an analog to digital converter 44 and a digital

snapshot memory 46 for storing a portion of the signal. Figure 3 discloses a flow chart

of the invention of Krasner. After the portion of the signal is stored 104, an FFT process

is initiated 112, the result is multiplied by a PN code 114. These code sequences

belong to a family known as Gold codes (column 2, lines 1-9). An inverse FFT process

is conducted 118 and a peak of the convolution is found 126. Krasner does not disclose

the snap shot memory stored only one millisecond of the received signal. Krasner

discloses storing typically 100 to 1000 frames corresponding to a duration of 100 msec

to 1 second duration (column 12, lines 8-15). Krasner also discloses this is only a

typical amount and the invention can operate when a "sufficient amount" of data has

been collected. It would have been obvious for one of ordinary skill in the art to use the

minimal amount of this data which still satisfies the "sufficient amount" limitation to

operate the system. One millisecond would correspond to one frame and is the absolute minimum which could be used. By using the minimum number of frames, the size of the snap shot memory could be reduced and thereby reducing the cost of the receiver.

Regarding claim 10, the peak detector attempts to refine the estimate of the peak value (column 14, line 66 to column 15, line 17).

Regarding claim 11, the Gold code is precomputed and stored in memory (column 2, lines 10-15).

Regarding claim 12, Krasner further discloses adjusting the carrier frequency to improve the phase estimate (column 2, lines 43-49).

Regarding claim 13, Krasner further discloses time shifting the signal for d seconds which is equivalent to multiplying the Fourier Transform (column 14, lines 30-46).

6.   Claims 1-8 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (US 6,133,871) in view of Moore (US 5,450,617).

Regarding claims 1 and 6, Krasner discloses a GPS receiver in figure 1A with a GPS antenna 40, a receiver front end 42, an analog to digital converter 44 and a digital snapshot memory 46 for storing a portion of the signal. Figure 3 discloses a flow chart of the invention of Krasner. After the portion of the signal is stored 104, an FFT process

is initiated 112, the result is multiplied by a PN code 114. These code sequences belong to a family known as Gold codes (column 2, lines 1-9). An inverse FFT process is conducted 118 and a peak of the convolution is found 126. Krasner does not disclose means for determining the carrier frequency based on the height of the peak. Moore discloses locating the peak magnitude and estimating the frequency of the carrier signal from that magnitude (column 9, lines 25-32). This takes place in the receiver. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the means for estimating the carrier frequency of Moore into the system of Krasner. This allows all major processing of the signals to take place in the receiver minimizing the dependence on outside components.

Regarding claim 2, the peak detector attempts to refine the estimate of the peak value (column 14, line 66 to column 15, line 17).

Regarding claims 3 and 8, the Gold code is precomputed and stored in memory (column 2, lines 10-15).

Regarding claim 4, Krasner further discloses adjusting the carrier frequency to improve the phase estimate (column 2, lines 43-49).

Regarding claims 5 and 7, Krasner further discloses time shifting the signal for d seconds which is equivalent to multiplying the Fourier Transform (column 14, lines 30-46).

Regarding claims 9 and 14, Krasner discloses a GPS receiver in figure 1A with a GPS antenna 40, a receiver front end 42, an analog to digital converter 44 and a digital snapshot memory 46 for storing a portion of the signal. Figure 3 discloses a flow chart of the invention of Krasner. After the portion of the signal is stored 104, an FFT process is initiated 112, the result is multiplied by a PN code 114. These code sequences belong to a family known as Gold codes (column 2, lines 1-9). An inverse FFT process is conducted 118 and a peak of the convolution is found 126. Krasner does not disclose the snap shot memory stored only one millisecond of the received signal. Krasner discloses storing typically 100 to 1000 frames corresponding to a duration of 100 msec to 1 second duration (column 12, lines 8-15). Krasner also discloses this is only a typical amount and the invention can operate when a "sufficient amount" of data has been collected. It would have been obvious for one of ordinary skill in the art to use the minimal amount of this data which still satisfies the "sufficient amount" limitation to operate the system. One millisecond would correspond to one frame and is the absolute minimum which could be used. By using the minimum number of frames, the size of the snap shot memory could be reduced and thereby reducing the cost of the receiver. Krasner does not disclose means for determining the carrier frequency based on the height of the peak. Moore discloses locating the peak magnitude and estimating the frequency of the carrier signal from that magnitude (column 9, lines 25-32). This takes place in the receiver. It would have been obvious for one of ordinary skill in the art

at the time of the invention to combine the means for estimating the carrier frequency of Moore into the system of Krasner. This allows all major processing of the signals to take place in the receiver minimizing the dependence on outside components.

Regarding claims 10, 15 and 17-20, the peak detector attempts to refine the estimate of the peak value (column 14, line 66 to column 15, line 17).

Regarding claims 11 and 16, the Gold code is precomputed and stored in memory (column 2, lines 10-15).

Regarding claim 12, Krasner further discloses adjusting the carrier frequency to improve the phase estimate (column 2, lines 43-49).

Regarding claim 13, Krasner further discloses time shifting the signal for d seconds which is equivalent to multiplying the Fourier Transform (column 14, lines 30-

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Conclusion

Any response to this final action should be mailed to:

> **Box AF**
> Commissioner of Patents and Trademarks
> Washington, D.C. 20231

> **or faxed to:**

>> (703) 872-9314, (for formal communications; please mark
>> "EXPEDITED PROCEDURE" or for informal or draft
>> communications, please label "PROPOSED" or "DRAFT")

>> Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
>> Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Kevin Burd, whose telephone number is (703) 308-
7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM -
6:00 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Kevin M. Burd
PATENT EXAMINER
December 17, 2002

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